

September/October 1995 \$2.00

MONTANA OUTDOORS





OUR POINT OF VIEW



BRAD GARFIELD

Autumn in Montana often brings warm days and crisp nights. Green leaves turn golden in aspen groves and along the cottonwood bottoms. Towering larch trees drop their needles while anglers in the know take to the water as others pack their rods away.

For many, thoughts have turned to hunting. Whether with bow, rifle, or shotgun, hunters stalk the prairies and scale the mountains.

Last year in Montana hunters harvested more than 32,000 elk—a state record. With this abundance, it's hard to believe only 2,000 elk were left in the state a century ago. Last year we also issued 748 moose permits. A century ago, moose were extinct in Montana.

Other game animals, too, will be

plentiful in most areas this fall. We must remember that much of the game in Montana lives on private land. Good hunters learn to ask first, and ask early (not early as in 4:00 a.m., but early as in before hunting season!).

Despite our many wildlife successes, the sage grouse is one game species that is not doing so well today. Though "sage" can refer to one's time-earned wisdom, sage grouse come by their name the hard way. They live in it. Unfortunately, sagebrush grasslands are home to a dwindling number of these birds throughout the West.

At one time sage grouse were so abundant an eastern Montana rancher claimed they darkened the sky (p. 23). Today they are being considered for listing as an endangered species. Is their decline due to loss of habitat,

drought, predation, or cyclic fluctuations? The answer is all of the above, in varying measure. These factors in combination make it difficult for sage grouse just to hold their own.

We still puzzle about cause and effect in the natural world. One thing we do know is that fragmentation of sage grouse habitat in Montana and across the West has been a major contributing factor in their decline.

Conserving sage grouse habitat is the one thing that is within our collective ability to achieve. In so doing, maybe we too will become sage.

**Patrick J. Graham, Director
Montana Fish, Wildlife & Parks**



DAVID BRYAN

Duck populations are on the increase, thanks to improved water conditions and efforts to restore upland and wetland habitat (page 13).

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Return of

You can, in Montana, hunt "the last remnant of a group of bizarre spiral-horned and fork-horned mammals that arose in North America in the Eocene Epoch."

Check the 1995 big game regulations for the season opening. Check the National Geographic Society's *Wild Animals of North America* for the accuracy of the ancestral lineage of *Antilocapra americana*—the American goat antelope, the pronghorn.

There is, in fact, a certain aura of the bizarre to the truth of the pronghorn's survival in Montana. One estimate guesses that at one time there may have been 2,500,000 antelope in the state, more than the vast herds of bison that once covered the land.

By 1924, only about 3,000 antelope survived. Indiscriminate hunting was partially to blame. The plunge in population was also brought on by the sodbusting days of the early 1900s when homesteaders cultivated and overgrazed vast stretches of native prairie, which also meant vast stretches of prime antelope habitat.

Ironically, it took the terrible drought of the 1930s to bring pronghorn populations back to huntable numbers. When hundreds of homesteaders left their land in despair, the wind helped the weeds and the sagebrush move back in. And that was just the turn of events the antelope needed to start their comeback.



the Native

by SAM CURTIS

By 1965 there were an estimated 75,000 pronghorns in Montana. Today, a mid-summer population count is likely to average around 150,000. This doubling of the pronghorn population in the last 30 years is one of Montana's wildlife management success stories. And it is all the more amazing when you consider that antelope populations in Montana were so low during the first half of the century that hunting them was prohibited between 1903 and 1943, except for a short season in a few counties in 1935-1936.

Perhaps as amazing as the roller-coaster history of Montana's pronghorn populations is the animal itself. Short and compact, a buck antelope may stand only three feet at the shoulder and weigh a mere 120 pounds. But there is no doubt that he is designed to move easily and speedily over his preferred habitat, the wide open spaces of the Great Plains.

With a heart twice as big as a sheep of equal body weight and with a windpipe and lungs to match, this critter is meant for speed and endurance. He can go 55 miles an hour in spurts. And he can cruise at 25 to 30 for three or four miles at a stretch. Antelope actually seem fond of letting you know they can pull out all the stops. While racing beside the gravel and gumbo roads of the Montana plains, they will pace a car or pickup and then pull ahead with apparent ease.

Antelope have an early warning system that alerts other members of their herd to possible danger. The white hair on the pronghorn's rump—which is longer than the tan hair surrounding it—can be fanned out to catch the light, creating a warning beacon visible for long distances.



MICHAEL S. QUINTON

Yet pronghorns can just as easily vanish from sight if they are alarmed. Eyes set in orbits that protrude from their skull give them a particularly wide angle of vision. And their sight has been compared to that of a person using six-power binoculars. Perhaps that is why they seem to have no trouble spotting moving objects that are as far as three miles away.

In addition, antelope have an early warning system that alerts other members of their herd to possible danger. The white hair on the antelope's rump is several inches longer than the tan hair surrounding it. This hair can be fanned out so it catches the light, giving it a reflective quality—a kind of warning beacon—that can be picked up by other antelope from miles away.

All these built-in attributes make the pronghorn a challenging animal to hunt. Yes. Yes. Some people know places where they can go on opening morning and end their antelope season in an hour or two. But why shortchange a good thing?

Perhaps the most intriguing aspect of antelope hunting is the chance to immerse yourself in the vastness and the complexity of the Great Plains.

That is best done alone (or with a good friend), on foot, and over a period of days. Add another day to do odd jobs for the rancher who's letting you hunt on his land (you make some lasting friends that way). And then take your hunting tactics from the animals you hunt.

Antelope are indigenous to the Montana plains. They evolved out of the landscape itself. They are true Montana natives, and they can teach us how to deal with the space and the topography of the terrain to which they are so closely bound.

For example, when resting, pronghorns in a group have the habit of bedding down facing in different directions. Whether this is done to keep a lookout on all flanks or done as a matter of happenstance is unimportant. It serves to keep watchful binocular vision on the lookout in all directions.

When scouting for antelope, try employing this tactic yourself. Spotting scopes and binoculars are ideal for locating pronghorns from miles away without causing them concern over your presence. When hunting with a companion, each of you can glass a different segment of the landscape. While alone, make a point of scanning

your surroundings a full 360 degrees.

Antelope herds seem to feel most comfortable in open, flat basins with plenty of visibility, especially where several drainages give them a choice of escape routes. Or they may gather on tablelands where erosional coulees and washes provide hiding and escape cover.

Although pronghorns don't linger over waterholes, and although they can go for long periods without water, a wet hole in dry times may draw them from 40 or 50 miles away.

Antelope are browsers and are particularly fond of sagebrush. But they also feed on weeds and grasses. And where grain crops are available, they're not averse to chowing down on them.

When surveying these likely locations for pronghorns, do what old, lone bucks often do, and select a ridge or knoll from which to survey your surroundings. These trophy bucks will climb to a high point and hed down next to a clump of sagebrush that breaks up their silhouette. You should use the same tactic, since antelope seem especially good at detecting your movement on the skyline. But be sure to check out prospective spotting knolls before you approach them. There may



BILL MCKRAE

Antelope feel most secure in flat, open basins where several drainages give them a choice of escape routes. By sitting on a hilltop and observing from a distance with spotting scope or binoculars, you can learn much about the lay of the land and how local pronghorns use it to their advantage.



BILL MCKRAE

well be an antelope watching you from up there.

Although the sagebrush country of Montana offers good visibility for you and the pronghorns, this terrain is also laced with innumerable coulees, draws, knolls, and ridges into and behind which whole herds of antelope seem to disappear. And nothing can give you a better sense of the intricacy and variety of the Montana prairie topography than hunting antelope in it on foot.

What appears to be a monotonous landscape when viewed from the insular atmosphere of your car's air conditioning, with the cruise control set at 70 on a level and straight interstate, becomes, when you walk through it, an

amazement of ups and downs and turn-arounds. Subtle changes in vegetation make a patchwork of different plants, some thriving in shade, others making a living in the full glare of the sun.

The Great Plains might better be named the Great Convolutions for the person willing to get intimate with this surprising landscape that can envelop antelope that were moments ago an entire herd so close you could see the black face masks of the males.

But the hunter can also use the convoluted character of pronghorn country to do his own disappearing act. Like the antelope themselves, get to know the lay of the land. Do some pre-season scouting if possible. At least

climb to high points and make some mental notes of the surroundings. The pronghorns that live here have memorized the maze of drainages that branch through these gumbo hills in erosional patterns that mimic the roots of trees and the veins of leaves. They depend on a complexity of cut-offs and runaways, of saddles and hidden basins to outmaneuver their pursuers.

Nothing will show you this better than half a day spent sitting on a hilltop watching how the local antelope outsmart other hunters. Watch where the goats consistently go and then make a plan.

Once, on a friend's ranch near Forsyth, I spent opening weekend on

the edge of a pine-covered butte watching a herd of antelope do a pinball routine through the lower terrain. There were several spots they used over and over to elude some over-anxious hunters. The goats liked a certain saddle between two inconspicuous knolls. And they often turned up a particular side draw that led to a broad basin where any hunter approaching was in full view. The side draw was the spot I chose to sit later in the week. And, after I exercised a little patience, that's where a fine lone buck came up the bottom of the coulee.

While watching the choices antelope make in picking favorite escape routes, you'll notice that they often show a tendency to follow the most level contours of the land. They like to circle the flanks of hills until draws open up instead of running up and down hills and ridges. Try mimicking this habit when making your move on pronghorns you have spotted from afar.

After making several mental notes of landmarks in the vicinity of antelope you want to approach, use draws and the backsides of hills and ridges to move in close. Be watchful, however,

when rounding bends in coulees. There may be an antelope down there. And even if it isn't the goat you're after, it may spook and in turn spook the one you do want.

Another pronghorn habit to pick up on is their tendency to keep an eye on their backtrack when on the move. Coyotes like to dog their trails; pronghorns have learned to live with that. But you, too, should check back where you've come from when stalking your game.

On one occasion, I'd taken almost an hour to move up a series of draws toward a herd I'd spotted from a good mile away. When I was just about to make my final approach, I glanced back from where I'd come and saw the same goats I was trying to sneak up on moving into the draw from a wash I'd just passed. Had I not checked my backtrack, another antelope herd would have vanished into the landscape.

A careful antelope stalk may take a few minutes or it may take an hour or more. And a lone goat or a herd may move some distance while you are out of sight. So make a point of checking their position every few minutes, when

possible, while you're moving in on them. But do it very carefully and very slowly. They may still be out of rifle shot, but then again they may have moved closer; you may be right on top of them.

I remember a time when I was accompanying two friends after getting my own antelope. We were making a final move on two bucks we'd spotted from a nearby ridge, and I waited at the bottom of a coulee while the hunters climbed up to look over the edge of the high ground. Within seconds of the time they went crouching over the top, one buck came piling into the coulee at full tilt. The other, I learned later, escaped around the far side of the ridge. Both bucks had been within yards of the hunters as they moved over the top of the hill. The surprise of the encounter gave the antelope just the edge they needed to beat a retreat.

Unlike deer and elk, antelope seem to be most in tune to danger when it comes from ridges and knolls, probably because they are so adept at spotting movement against the skyline. This does not mean you can't approach from above, but when you do, do it on your



JOHN BARNES

belly. The snake-in-the-grass approach gives you an honest feel for the landscape while keeping your intent inconspicuous to the antelope. Often, however, you can get up on a pronghorn more easily by approaching from below, up coulees, draws, and washes.

It's important when hunting antelope to depend on careful stalking to get close enough so those 300- to 400-yard shots aren't necessary. If you have to brag about your hunting abilities, it's better to brag about how close you stalked an antelope, not about how far away you shot it.

On the plains, distance and size can be deceiving. In bright, open areas typical of antelope country, it's easy to overestimate distance. So your tendency on longer shots is to aim too high.

Also the size of a goat, especially a lone goat, can be difficult to judge. If you remember that an adult pronghorn's ears average about six inches, you can size up its horns accordingly. Look for a buck with horns at least twice as long as his ears if you want good weight to your game. If the horns are three times as long as the ears, you're getting up into trophy class.

Also remember that bucks have a black jaw patch that gets darker and larger with age. This can help you choose the biggest buck out of several possibilities. But the biggest buck isn't going to be a culinary delight on the dinner table. Young antelope steaks and chops, on the other hand, can be the most delicious wild game you'll ever polish off your plate.

The habit of picking out a particular antelope to stalk across the expanses of the Great Plains adds a dimension to pronghorn hunting that has a number of salutary effects.

For starters, when you force yourself to make a choice, instead of taking the first animal to come along, you clearly define what you are after, whether that be good food, good horns, male, female, or trophy buck.

It also requires a sense of focus and heightened concentration on your game



MICHAEL S. QUINTON

Large eyes set in orbits that protrude from the skull give pronghorns a wide angle of vision. Their sight has been compared to that of a person using six-power binoculars. Although the sagebrush country of eastern Montana may appear flat when viewed from a distance, it is laced with coulees, washes, and ridges into which antelope can quickly disappear. Hunters, too, can use this convoluted topography to advantage when making a stalk (opposite page).

that can only lead to a clearer understanding of that animal's uniqueness: the particular spread and tilt of its horns, the pattern and color of its hair, a limp, a scar, the shape of its face.

In addition, the job of stalking a particular animal is going to require a honing of skills, a practice, and a patience that pushes you toward

becoming a better hunter.

But, best of all, the search for the right antelope keeps you out there longer. It keeps you sneaking up coulees, sitting on buttes, crawling on ridges. It keeps you in touch with a unique Montana landscape and with a truly native animal that has evolved with it. The American pronghorn. ■



Devil Bear

IN LEGEND AND LORE, the wolverine leaps straight from the pages of a Stephen King horror novel: ill-tempered, mean, and able to kill prey and fight off competitors many times larger than its 30-pound average weight. Campfire tales are rife with the almost supernatural abilities of this wilderness "Cujo" (also known by the endearing names of devil bear, skunk bear, and devil beast) to rob traplines or destroy backcountry cabins in search of food.

In reality, though, this largest terrestrial member of the weasel family probably just wants to be left alone to gnaw on a frozen elk carcass.

"I wouldn't want to be in a closed room with one," says long-time trapper Dick Kenck of Augusta, "but they are a lot of fluff. Hiss and spit at you. But if they could get away from you, they'd take off."

At 89, Kenck is perhaps the last of the old-time trappers, men who lived each winter in the backcountry search-

ing for fur. His experiences with wolverines parallel what has happened to the species statewide.

In the late 1920s and early 1930s, Kenck and a partner worked traplines in what is now the Bob Marshall Wilderness Area. "We'd never see anybody all winter from November to April," says Kenck. His lines stretched 60 miles from a base cabin near Benchmark, west of Augusta, across the Continental Divide. Every 12 to 15 miles he had an overnight cabin.

Despite his extensive backcountry experience, Kenck rarely saw a wolverine. "Just once in awhile you'd see a wolverine track," he recalls. "Then in the 1950s, I was hunting lions. About that time wolverines moved in here [near Augusta] and they were everywhere. You'd even find them out in the flats."

The first recorded observations of wolverines in Montana came from the Lewis and Clark Expedition near the present city of Great Falls and in the

by BRUCE AUCHLY



MICHAEL H. FRANCIS

Although wolverines are reputed to be ill-tempered destroyers of backcountry cabins, in reality all they want is to be left alone to gnaw on a frozen carcass. At right, old-time trapper Dick Kenck of Augusta displays traps like those he used in the 1920s and 1930s in what is now the Bob Marshall Wilderness Area.



BRUCE AUCHLY

Big Hole Valley near the Idaho-Montana border. Though probably never plentiful because of their status as far-ranging, top-of-the-food-chain predators, wolverines likely lived in all the state's mountainous areas prior to the fur trade of the last century. In fact, wolverines probably inhabited old-growth forests across the northern tier of

states from Washington to Maine, and down the spine of the Rockies.

Unregulated commercial trapping and predator poisoning campaigns, along with logging and mining practices of the 1800s and early 1900s, led

to the near demise of the wolverine in the lower 48 states by the time Kenck took up trapping. But by the 1950s wolverines had rebounded in Montana, even though they were still classified as predators and were not protected by the state.

In a 1955 report, Montana Fish and Game Department biologist Fletcher Newby and Dr. Philip Wright reasoned the population expansion likely came from animals moving south out of Canada and Glacier National Park. Also, low fur prices and closed seasons on pine martens kept many trappers out of backcountry areas.

From the mid-1950s until today, the species has continued to recover, says Brian Giddings, Montana Fish, Wildlife & Parks (FWP) furbearer biologist. "Since the 1970s, the discontinuation of widespread poisoning has probably helped predator and scavenger populations recover, along with the state's record high ungulate [deer and elk] numbers." Prior to 1972, poisons like strychnine, cyanide, and Compound 1080 were used indiscriminately to

control coyotes and other predators.

Currently, the wolverine is listed as a Montana furbearer. That means it is protected and managed through regulated fur harvest seasons. In fact, Montana is the only state in the lower 48 to allow a limited wolverine harvest. Trappers may take one animal per season. For the last 10 years, the annual take has remained about eight.

In 1994 two conservation organizations petitioned the U.S. Fish and Wildlife Service (USFWS) to list the wolverine under the Endangered Species Act in the lower 48 states. The USFWS expressed concern about the wolverine's status nationwide, but said not enough information exists to justify listing it as an endangered species.

Giddings feels the Montana population is stable and may be increasing slightly. To back up that contention, he relies on four types of evidence: winter track surveys, trapper harvest information, trapper log books, and observations provided by FWP biologists and wardens.

"This is a long-term effort," Giddings says. "We'll need at least five to ten years of data." Wolverine harvest information goes back to the 1970s, but log books and observation forms only date to 1992, when Giddings took charge of the furbearer program.

Of the four methods, winter track surveys, initiated by FWP in 1990, are perhaps the most interesting. Biologists and trained FWP personnel snowmobile or cross-country ski established routes every year, recording the number of tracks they see. Dave Dziak, an FWP research technician in southwestern Montana, surveys 21 different routes each winter in the Anaconda-Pintler Wilderness Area. "Mostly we're looking for distribution of Canada lynx, population estimates of martens, and the occurrence of fisher and wolverine," says Dziak. "Last year there was a notable increase in wolverine tracks, the most I've ever seen."

WOLVERINES ARE WELL adapted to their rugged backcountry existence. Compact and strongly built, adults measure 31 to 51 inches in length. In Montana,

females average 18 pounds and males 28. They have massive skulls and powerful jaw muscles, an asset when feeding on frozen meat and bones of ungulate carcasses. One study found that older wolverines (4 to 5 years of age) commonly have broken teeth, apparently from chewing on bones or traps.

The wolverine's highly valued fur is brown to almost black; two broad, yellowish stripes start at the shoulders and join on the rump. White or light tan markings sometimes appear on the throat or chest. The wolverine's feet are large in relation to its body size and the claws are long.

In Montana, wolverines generally inhabit coniferous forests in the western and southwestern part of the state. In recent years, however, they have been observed throughout central Montana in smaller mountain ranges that connect with the Rockies, pointing to the importance of travel corridors.

Wolverines are members of the mustelid, or weasel, family. At least 10 mustelids call Montana home: river

otter, striped skunk, black-footed ferret, pine marten, mink, wolverine, fisher, short-tail weasel, long-tail weasel, and least weasel. As in any family, some members are likable, others repulsive. Everyone likes to watch the playful antics of the otter, no one wants to be around the skunk. All members of the weasel family eat meat, pack an insatiable appetite, and have offensive musk glands (obviously the skunk, not so obvious the otter).

Many mustelids are what biologists call *circumpolar*—i.e., the same species or a close relative can be found in a circle around the north pole: Scandinavia, Siberia, and North America. The wolverine is no exception. Despite the animal's worldwide distribution, little was known about it until recently.

The first intensive field study of wolverines in North America was conducted in northwestern Montana in the mid-1970s by Dr. Maurice Hornocker and FWP biologist Howard Hash. They concluded that in the lower 48 states, only Montana had adequate



The wolverine's dark, highly valued fur is offset by two broad yellowish stripes that start at the shoulders and join on the rump. In Montana, wolverines are classified as furbearers, which means they are protected and managed through regulated fur harvest seasons. For the last 10 years, the annual take has been about eight.

DANIEL J. COX

wolverine numbers to constitute a viable population.

Although a few more studies have been done since then—mostly in Alaska, Canada, and one still in progress in Idaho—the Hornocker and Hash study remains the definitive work

on wolverine home range size and habitat use.

Wolverines are far-ranging animals: home ranges average 160 square miles for adult males and 150 square miles for females. Because they are scavengers, wolverines have been known to cover more than 40 miles in a day or two without rest.

Until recently, it was thought wolverines were loners, staying away from even their own kind

except during the summer breeding season. Recent research in Idaho suggests otherwise, however. Jeff Copeland, a researcher with the Idaho Fish and Game Department, has spent the last three years trapping, radio-collaring, and tracking wolverines in the Sawtooth Mountains of central Idaho. Some of his findings may be cause for reevaluation of current theories.

"We had a real high occurrence of animals living together and traveling together outside of breeding season," Copeland says. And that's not just mom and the teenagers. It is adult and yearling, males and females, aunts and uncles, half-brothers and half-sisters. "We found juvenile wolverines traveling with resident males," he continues. "And we found brothers and sisters traveling with half-sisters." Copeland feels the young leave the mother at 6 months of age, but don't actually strike out on their own until they are 2 years old. As a result,

yearling wolverines stick with older animals in the family unit and learn necessary skills before establishing their own territories as adults.

Another potentially important finding involves the wolverine's need to den in isolated areas. Apparently from mid-February, when the young are born, until mid-May, when they are weaned, females will not tolerate human disturbance. Says Copeland, "Just the presence of cross-country ski tracks, snowshoe tracks, or snowmobile tracks would cause the female to abandon the den every time. They don't abandon the kits, but they abandon the den."

The rest of the year wolverines abide humans, even roaming through camps searching for food. And though an occasional winter traveler may cause a wolverine to find a new den site, the intrusion will not cause undue stress, says Copeland. But if skiers or snowmobilers "discover" a remote alpine basin, there is no chance of succeeding generations of female wolverines denning there. "The single most important factor is protecting these areas," he says.

Although Montana has a variety of isolated and precipitous roadless and wilderness areas where wolverines can find winter solitude, increasing human development and activity raises concerns about the future of this fascinating member of the weasel family. That makes FWP's censusing efforts all the more important, says FWP's furbearer biologist Giddings.

Wolverines hold a special appeal for most of us because they are so secretive and live in some of Montana's most rugged, beautiful terrain. But there are two other compelling reasons for monitoring their population and managing them. First, the wolverine is part of our heritage, a wildlife species that helps make Montana unique. Second, if Montana is ever challenged on its wolverine trapping season, scientific data will be needed. "There's no substitute for good information about these animals and their habitat requirements if we want to manage them effectively," says Giddings. ■

MICHAEL H. FRANCIS



Idaho Fish and Game Department researcher Jeff Copeland has found that female wolverines with young are extremely sensitive to disturbance between mid-February, when the young are born, and mid-May, when they are weaned. In Copeland's study, just the presence of cross-country ski tracks, snowshoe tracks, or snowmobile tracks would cause the female to abandon the den (but not the kits). The wolverines photographed for this article were captive animals accustomed to seeing humans.

Partnerships on the Prairie



TO AN AERIAL OBSERVER, the prairie pothole region of the United States and Canada is a glistening network of wetlands interspersed with narrow bands of native prairie and cropland—what writer Jon Luoma calls “a vast green canvas spattered with galaxies of blue spots.” Although this 300,000-square-mile area represents only 10% of North America’s waterfowl breeding range, it contributes more than *half* of the continent’s annual duck production. Despite the fact that thousands of prairie potholes have been drained to create more farmland, it is still one of the richest wetland areas on earth.

by SHAWN BAYLESS and HOWARD BURT



That is precisely why the North American Waterfowl Management Plan (NAWMP), an international partnership of state, federal, provincial, territorial, and private organizations formed in 1986 to stem the downward trend in duck populations, has targeted the prairie pothole region as critical to waterfowl recovery. NAWMP is organized around more than a dozen "joint ventures"—key geographical areas in which governments, private organizations, and individuals are working together to restore waterfowl populations. The U.S. Prairie Pothole Joint Venture, which includes portions of Montana, the Dakotas, Minnesota, and Iowa, eventually hopes to hold 6.8 million breeding ducks annually, producing a fall flight of 13.6 million. To achieve this goal, an estimated 7.6 million acres of waterfowl habitat need to be created or improved by the year 2000.

NAWMP's ultimate objective—restoring continen-

tal waterfowl populations to levels of the late 1970s, when the fall duck flight numbered approximately 100 million—can only be reached through the cooperative efforts of numerous agencies, organizations, and individuals. A major focus of the joint ventures is working with private and public landowners to restore and enhance wetlands and adjacent upland habitats for the benefit of waterfowl and a variety of other wildlife species. Although NAWMP depends heavily on traditional funding sources (primarily state and provincial wildlife agencies, the U.S. Fish and Wildlife Service, and Canadian Wildlife Service), private conservation groups are also crucial to the program's success. For example, Ducks Unlimited has pledged \$300 million over the next 15 years to NAWMP, in addition to the \$500 million it will spend during that period on its own habitat projects throughout North America.

THE PRAIRIE POTHOLE REGION

Prairie jewels, sloughs, or potholes. All are descriptive of wetlands formed when retreating glaciers left chunks of ice buried in the prairie some 10,000 years ago. In parts of the northern plains, the water acreage may outweigh land acreage, and 40 to 80 wetland basins per section are not uncommon.

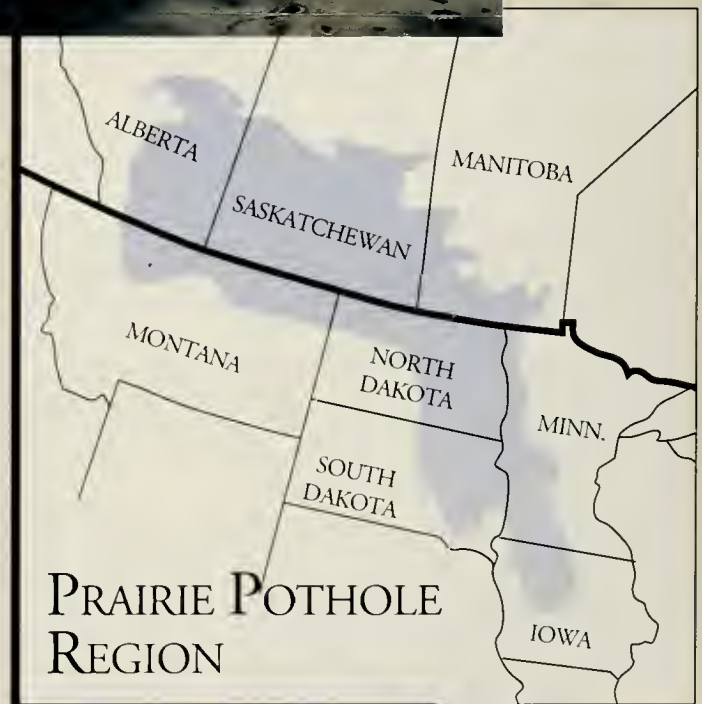
A perfect duck nursery, the prairie pothole region produces at least half of the continent's ducks—mallards, pintails, gadwalls, wigeon, scaup, teal, canvasbacks, redheads, and a host of others. Geese, swans, shorebirds, grebes, wading birds, and songbirds also depend on these fertile habitats—as many as 70 bird species may nest on or near an individual prairie pothole.

If you visit the prairie pothole region in a good water year, you will experience firsthand what a little water and adequate nesting cover can do for ducks. In Montana, you can witness this spectacle from Cut Bank to Plentywood, where the region's boundaries reflect the southern extension of the Wisconsin Ice Age (see map).

Across the northern plains, the number of potholes has been decreasing as land is converted to agricultural production. North Dakota has lost about half of its original wetlands, and Alberta, Saskatchewan, and Manitoba have lost 40%. As a result, eastern Montana—because it has lost fewer of its wetlands and retains good grassland nesting cover in many places—has become increasingly important in maintaining the nation's waterfowl supply.



GLENN D. CHAMBERS





DEANER BRYAN

Providing suitable upland cover for waterfowl nesting has been the major focus of the Northeast Montana Prairie Pothole Joint Venture in Sheridan, Roosevelt, and Daniels counties.

In eastern Montana, two "stepdowns" of the U.S. Prairie Pothole Joint Venture have been established to help get waterfowl populations back on track: The Northeast Montana Prairie Pothole Joint Venture and the Beaver Creek Prairie Pothole Joint Venture. As outlined below, both projects show great promise for boosting the region's waterfowl production.



HOWARD BURT



EWING PHOTO

Predator-proof nesting structures are one way of boosting waterfowl productivity in intensively farmed areas where foxes and other predators zero in on small patches of remaining cover.

THE NORTHEAST MONTANA PRAIRIE POTHOLE JOINT VENTURE

Located in Sheridan, Roosevelt, and Daniels counties, the project area is bounded by Canada on the north, North Dakota on the east, and the Missouri River on the south. Unlike many parts of the prairie pothole region where agricultural development has diminished wetland acres, this part of northeastern Montana still has thousands of natural wetland basins. The major problem is not scarcity of water, but lack of suitable upland cover for successful nesting.

Loss of upland cover around wetland basins forces ducks to nest wherever they can: roadside rights-of-way, pond margins, or even wheat stubble. When foxes, skunks, raccoons, crows, magpies, and other predators concentrate in these narrow bands of remaining vegetation, duck production often drops below the 15% nesting success level required just to maintain existing numbers of most species. In intensively farmed portions of the prairie pothole region, nesting success rates of 10% or even lower are all too often seen for mallards, pintails, gadwalls, and other upland nesting ducks.

To remedy this situation in northeastern Montana, waterfowl managers are restoring permanent upland vegetation, installing predator-proof artificial nesting structures, and removing predators from waterfowl production areas and nesting islands in large, permanent wetlands. Because most of the upland areas adjacent to wetlands in the project area are privately owned, biologists are working with landowners to establish rest-rotation grazing systems and leases or easements that provide for cost-share planting of dense nesting cover.

Sources of revenue for these projects include FWP's Upland Game Bird Habitat Enhancement Program (funded by sale of upland game bird licenses) and the Montana Waterfowl Stamp Program (funded by sale of duck stamps to hunters and stamp collectors).

Once sufficient upland vegetation has been established around wetlands to ensure adequate nesting success, managers shift their focus to water areas favored by ducks for pairing and brood rearing. Many

Because ducks (like the canvasbacks at right) are highly territorial, construction of small "pair ponds" can greatly increase the number of breeding pairs occupying a wetland complex.

ducks are highly territorial, aggressively defending their breeding area and airspace from intruders, especially from ducks of the same species. For that reason, wetland habitats consisting of small, well distributed water areas where ducks remain isolated from each other can accommodate more breeding pairs per unit area than larger ponds or reservoirs.

Creating numerous "pair ponds" within roughly a

mile of larger marshes or reservoirs can significantly increase the number of breeding pairs occupying a wetland complex. These shallow ponds, some of which contain water only seasonally, have the added benefit of



DENVER BRYAN

CRP: CRUCIAL LINK IN WATERFOWL RECOVERY

Thanks in large part to the Conservation Reserve Program (CRP)—a government farm program established in 1985 to reduce erosion and create wildlife habitat by taking agricultural land out of production—8 million acres of high-quality upland nesting habitat have become available to waterfowl in the prairie pothole region. This, coupled with abundant runoff in 1994 that filled potholes for the first time in nearly a decade, set the stage for a dramatic upturn in continental waterfowl populations, from fall flights of less than 60 million in the early 1990s to more than 70 million in 1994. Last fall, for the first time in years, hunters enjoyed more liberal regulations and excellent waterfowl hunting across the flyways.

A dark cloud looms on the horizon, however. The future of CRP depends on the fate of the 1995 Farm Bill, now being debated in Congress. Because most existing CRP contracts will expire by 1998, failure to continue the program will mean millions of acres of prime duck nesting habitat plowed under by the year 2000. Because biologists estimate CRP lands in eastern Montana, the Dakotas, Minnesota, and northern Iowa contribute up to a million additional ducks to the fall flight, the demise of the Conservation Reserve Program would be devastating to the nation's waterfowl recovery efforts.



GLENN D. CHAMBERS



BILL MARCHEL

Northern pintails

DUCKS ON THE REBOUND

Abundant snowfall in the winter of 1993-94 and good runoff conditions resulted in excellent pair habitat throughout much of the prairie pothole region in 1994. These wetland conditions, combined with improved upland nesting cover, contributed to the region's best waterfowl production in years—for several species, 20 to 40% increases over previous years.

Waterfowl surveys conducted on eastern Montana's joint ventures during 1994 showed utilization by 14 species of ducks, Canada and snow geese, tundra swans, and sandhill cranes. The majority of the breeding pairs and duck broods observed in the project areas were mallards, gadwalls, and northern pintails.

Surveys also indicated that 50 nongame bird species used the joint venture projects in 1994. Most common were Wilson's phalaropes, lesser and greater yellowlegs, long-billed dowitchers, and yellow-headed blackbirds.

Water conditions across the prairies continued to improve for waterfowl in 1995, contributing to significant increases in nationwide duck numbers. The breeding mallard population rose 18% to 8.3

million, the highest level since 1972. In addition, canvasbacks were up 47%, redheads 36%, and gadwalls 22%. The overall breeding duck population was estimated at 35.9 million, more than 10% above the 1994 count.

Although waterfowl populations have increased in the past two years due to improved habitat conditions, most duck species are still below the population goals set out in NAWMP. Wetland habitat continues to be lost to draining, filling, and urban development, while native prairie grasslands and sagebrush grasslands are converted to cropland. Long-term waterfowl recovery will depend on protection of remaining wetlands, restoration or creation of new ones, and continued improvement of upland nesting habitat.

being especially rich in insects and small crustaceans that hens need to provide protein and calcium during the egg laying period. Because juvenile hens return to these areas in subsequent years to raise broods of their own, pair ponds are instrumental in boosting duck production.

After the eggs have hatched successfully, hens move their broods to larger, more secure water bodies that contain abundant emergent vegetation. These brood marshes are critical because they provide hiding and escape cover for the ducklings as well as abundant food items such as invertebrates and submerged leaves, stems, and seeds.

The pair and brood pond projects described above are generally funded through the Montana Waterfowl Stamp Program, private conservation groups like Ducks Unlimited, and the U.S. Fish and Wildlife Service's (USFWS) "Partners for Wildlife" program. These projects have been highly popular with farmers and ranchers who realize direct benefits to their operations while doing their part to restore waterfowl populations and provide habitat for the many wildlife species that depend on wetlands and adjacent uplands.

THE BEAVER CREEK PRAIRIE POTHOLE JOINT VENTURE

Initiated in 1989, the Beaver Creek project originally encompassed 300 square miles in southern Phillips County. In 1993 the boundaries were expanded to include all of Phillips and Blaine counties. About a third of the land in these counties is in public ownership, with the Bureau of Land Management (BLM) administering approximately 1.5 million acres.

The majority of the project area is native prairie grassland or sagebrush grassland, and livestock grazing is the major land use. Only about 18% of the land area of Phillips and Blaine counties is considered cropland, including land enrolled in the Conservation Reserve Program (see sidebar on opposite page). This area was chosen as a joint venture because previous research indicated high duck pair densities in its wetlands and good nesting success due to the large blocks of grassland or sagebrush grassland cover surrounding them.

Although Beaver Creek is part of the prairie pothole region, the number of natural wetlands in this area is



HOWARD BURT

relatively low. Because water, rather than upland cover, is the primary factor limiting duck production, the focus has been on construction of small pair ponds, rehabilitation of existing reservoirs, and restoration of drained wetlands. Where nesting cover is lacking, managers have constructed nesting structures and nesting islands. In addition, rest-rotation grazing systems and permanent cover plantings have been initiated to ensure that productivity of these wetland/upland complexes remains high.

As in the Northeast Montana project, funding comes from a variety of sources, including the Montana Waterfowl Stamp and Upland Game Bird Habitat Enhancement programs. Ducks Unlimited plays an essential role, as does USFWS's "Partners for Wildlife." Other cooperators include the BLM, the Soil Conservation Service, and private landowners.

AS WITH ALL WILDLIFE, the key to the future of waterfowl is habitat. NAWMP's joint venture projects in Montana have been formed to protect, restore, create, and improve habitat for waterfowl and other wildlife species while providing recreation for hunters and other wildlife enthusiasts. They are succeeding through the efforts of many groups having many different and sometimes opposing viewpoints. Because most of the waterfowl habitat in these areas is privately owned, participation of landowners is crucial. Projects on private land not only benefit waterfowl, upland gamebirds, and nongame species, but aid farmers and ranchers through stock water improvements, more efficient grazing systems, and permanent cover plantings. With continued cooperation among state and federal wildlife agencies, landowners, and private conservation organizations, Montana's joint ventures can play a critical role in restoring the nation's waterfowl populations. ■

The Beaver Creek Prairie Pothole Joint Venture seeks to create more waterfowl habitat through construction of small ponds, rehabilitation of reservoirs, and restoration of drained wetlands (above photo). Thanks to Montana's joint venture projects, hunters should enjoy improved waterfowling this autumn.



MIKE BARLOW

GROWING PAINS

in the Bitterroot



"B

USTING AT THE SEAMS," proclaimed the *Missoulian's* front page banner.

Eugene Wandler agrees. "I never thought I'd live to see this," says the lifelong resident. "It used to be a big deal to see a car coming up the county road after dark. Now I have to run [to avoid the traffic] when I cross the road to check my mailbox."

Montanans were already calling it "Little California" by the 1990 census. Only four years later, its population had swollen by another 23%. Today it is the fastest growing region in Montana. If present trends continue, recent immigrants (since 1985) from other states will constitute a majority of its population by the turn of the century.

It is the Bitterroot Valley. In the midst of its changing landscape, Montana Fish, Wildlife & Parks (FWP) faces the challenge of managing two elk winter ranges. The Calf Creek and Threemile Wildlife Management Areas (WMAs) epitomize FWP's struggle to remain faithful to past promises of providing elk winter range in perpetuity, while adapting to the values and impacts of a changing and growing human population. In many ways, FWP managers have found themselves starting from scratch at Calf Creek and Threemile, introducing themselves to

by MIKE THOMPSON

Calf Creek and Threemile Wildlife Management Areas

Calf Creek (previous page) and Threemile (right) wildlife management areas, established in the 1960s to provide important elk winter range, are rapidly becoming islands in a sea of residential development. To serve the needs of wildlife and the public in this changing environment will require new partnerships and innovative management strategies.

new neighbors and constituents, searching for common ground in their objectives and approach.

FWP's objectives at Calf Creek and Threemile evolved with the interests and needs of a small, rural populace. During the years following World War II, strong public interest in elk and elk hunting coincided with the gradual abandonment of farms on the dry, west slope of the Sapphire Mountains. Provided with this opportunity to secure important winter ranges, FWP began purchase of Calf Creek WMA in 1960 and Threemile in 1967.

Today, the populace of the Bitterroot Valley is growing increasingly cosmopolitan in its values and heritage. People are more apt to appreciate elk as one component of an attractive landscape, rather than as a focus of their lifestyles. People are reinvading the west slope of the Sapphires at an unprecedented rate, not to raise crops, but to buy 20-acre homesites from ranchers who are settling estates, dealing with climbing property values and taxes, or simply taking advantage of the booming real estate market.

In the 1960s, the forage requirements of a recovering elk herd were in competition with a land-based economy. Native plants preferred by elk on private and public lands were routinely consumed instead by grazing cattle, horses, or domestic sheep. Opportunistic elk raided ranchers' unprotected haystacks during winter, and FWP struggled to balance the often conflicting demands of ranchers and hunters. The purchase of the Calf Creek and Threemile WMAs was a strategy to alleviate elk damage by reserving key winter ranges exclusively for wildlife. In the 1960s and '70s, these WMAs normally supported 300 wintering elk.



MIKE THOMPSON

Today, elk numbers in the Bitterroot Valley are at twentieth century highs, sustained on lands subjected to an expanding variety of uses. Increasingly, private landowners do not depend upon their lands for income, and many enjoy attracting elk. Some elk are in locations that are too densely inhabited by people to safely permit herd control by hunting. Remaining farmers and ranchers continue to sustain damage to crops and fences, but the problems and solutions are more complex than in the 1960s. Although the Calf Creek and Threemile WMAs continue to provide winter range for about 300 elk, this now represents a comparatively small proportion of the Bitterroot Valley elk herd, and the role of these WMAs is less obvious.

In the Bitterroot Valley of the 1960s, elk could distance themselves from human presence and associated disturbances during winter with comparative ease. No one expected to see the day when displacement of elk from portions of the WMAs by advancing human settlement would pose a potential problem. But today many people have discovered that homesites near public lands provide added open living space and security against development in their backyards. Indeed, FWP's commitment to leaving an elk habitat legacy for Montanans may be attracting and accelerating residential development near its WMAs, threatening to isolate winter



MIKE THOMPSON

ranges from important surrounding habitats. Residential growth along Calf Creek's borders is well underway, and Threemile WMA lies only one mile from the nearest platted subdivision.

Population growth has led to dramatic changes in use patterns on the WMAs as well. Twenty years ago, any humans encountered on these Bitterroot WMAs were likely hunting elk, rounding up rogue livestock, or researching elk biology. Otherwise, the WMAs were largely left to the elk. Although motorized vehicles were prohibited during winter and early spring, people on foot or horseback attracted little regulatory concern.

Today, the Calf Creek and Threemile WMAs attract diverse recreational activities. A typical elk hunting season in the 1990s supports



People increasingly use the Bitterroot WMAs to hike, ride horses, cross-country ski, picnic, and bicycle. Recurrent disturbances of wintering elk have prompted FWP to prohibit recreational access from December 1 to May 15 at Threemile, and to propose the same option for Calf Creek.

600 hunter-days of effort at Calf Creek and 500 hunter-days at Threemile. The archery, mountain grouse, and black bear seasons attract less intensive hunting activity. People increasingly visit these WMAs to hike, ride horses, cross-country ski, picnic, and bicycle. Local equestrians have adopted Calf Creek as a preferred riding area due to its accessibility and gentle terrain. Recurrent disturbances of wintering elk have prompted FWP to prohibit all forms of human access from December 1 to May 15 at Threemile, and to propose the same option for Calf Creek.

When FWP purchased the Bitterroot WMAs, elk were animals of wild places, elk hunting was a cultural commonality, and the people of the Bitterroot Valley shared much the same heritage and values. It was easier for FWP to develop a program of WMA acquisition and management that broadly fit the needs of wildlife and people.

Today the traditional management focus on the Calf Creek and Threemile WMAs may no longer be appreciated by a broad cross section of the changing Bitterroot public. The modern populace is a potpourri of heritages, experiences, convictions, and interests, and hunting may already be more divisive than unifying as a cultural force. The elk, too, have changed. Modern elk have adopted varying behavioral strategies across a landscape of dissected ownership and use, and

some have become relatively habituated to human activities.

This illuminates a crossroads in FWP's management direction on the Bitterroot WMAs. Proceeding on the traditional path of minimal management, confined within FWP property lines, will likely render these WMAs ineffectual islands, cut off from adjoining habitats by subdivisions and isolated from local communities by declining support. The traditional path is growing untenable.

The question is whether maintenance of the Bitterroot WMAs is the best use of FWP's habitat management funds. FWP is not a land management agency per se; its WMAs are exceptions, created only as needed to help achieve broader wildlife population goals. Typically, FWP acquires parcels that serve to link adjoining habitats, and highest priority is given to activities that further FWP partnerships with adjoining landowners to enhance wildlife habitat beyond WMA borders. Clearly, a fresh approach is needed on the Calf Creek and Threemile WMAs.

Recently, FWP has ventured away from its traditional path on the Bitterroot WMAs, moving instead toward partnerships for habitat enhancement with adjacent landowners and diverse local factions. In 1992, FWP used a public involvement approach to revise the management plan for the Threemile WMA. This process paved the way for WMA managers to cooperate with

adjacent landowners to control noxious weeds and rejuvenate grassland winter ranges. Further, it provided for establishment of a cooperative habitat management system in 1994, using one neighbor's cattle as the carefully controlled prescription for maintaining forage production and quality on both the WMA and private land. Concurrently, FWP initiated discussions with another neighbor to obtain security from future subdivisions by way of a conservation easement.

Following the Threemile example, a public involvement process was begun in late 1994 to revise the Calf Creek plan. This effort introduced FWP managers to constituents who were unfamiliar with the concept of managing public land primarily for the benefit of wintering elk, even to the exclusion of the public during winter. These individuals were more familiar with the mandates of the U.S. Forest Service, the major landowner in the Bitterroot Valley. Multiple use is the guiding principle by which the Forest Service balances the timber, grazing, recreation, fisheries, wildlife, and other interests of the nation's taxpayers.

In contrast, state or federal income taxes do not fund the management of the Threemile and Calf Creek WMAs. Instead, these winter ranges were purchased and are maintained with hunters' dollars. Specifically, proceeds from the sales of Montana hunting licenses were matched by funds from an 11% federal excise tax on arms and ammunition to purchase the Threemile and Calf Creek properties for the express purpose of providing elk winter range. Alternative uses of the WMAs are permitted only if they enhance or are compatible with winter range values for elk. If there is conflict

between public recreation and the needs of wintering elk, FWP is mandated to favor the elk.

Ironically, only through change can the legacy of elk winter habitat be perpetuated on the Threemile and Calf Creek WMAs. Change, however, can be expensive; with limited funds, difficult trade-offs must be considered. Some argue the Bitterroot Valley is a lost cause, lost to human population growth, residential subdivisions, and spotted knapweed. There is some logic in saving the best of the rest, in

minimizing the Bitterroot WMAs to save money for protecting unspoiled habitats in more remote regions of Montana. But more would be lost in retreat than the WMAs alone.

Charles Dickens might have called the Bitterroot Valley "The Ghost of Montana Future." Although most pronounced in the Bitterroot, the trends of human immigration are the same across most of western Montana. To serve the needs of wildlife and the public in the Bitterroot Valley today is to learn how to contribute effectively throughout

western Montana in the future. In that light, the Bitterroot is a proving ground, a place for FWP to devise and revise the policies that will best serve a new generation of Montanans.

Increasingly, people are becoming Montanans not only by birth but by choice, and people in unprecedented numbers are choosing the Bitterroot. We hope FWP habitat programs will continue to play a prominent role in the Bitterroot Valley, where Montanans choose to live. ■

Calf Creek and Threemile Wildlife Management Areas

Location: In Ravalli County, Threemile WMA is located 9 miles east of Florence and Calf Creek WMA is located 8 miles east of Hamilton.

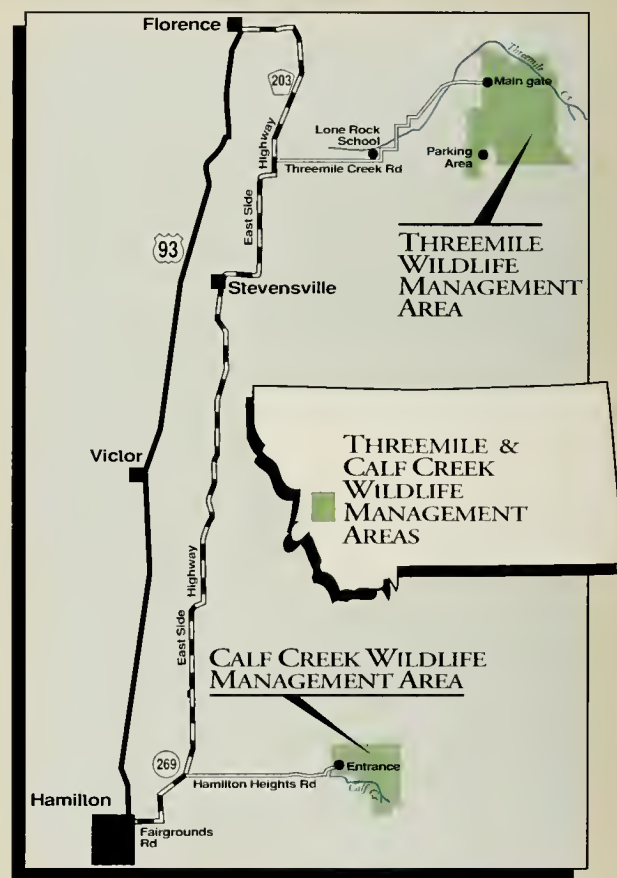
Size: Threemile WMA is 6,049 acres and Calf Creek is 2,333 acres. Both are FWP-owned, excepting 160 acres leased by FWP from the School Trust.

Acquisition date: Calf Creek parcels were acquired in 1960, 1969, 1979, and 1986. Threemile acquisitions were in 1967, 1968, and 1971.

Access: Threemile WMA: From Florence, take the Eastside Highway (Route 203) east and then south for 6.1 miles; at Threemile Creek Road turn left (east) and proceed 3.3 miles; after passing Lone Rock School, turn left (north) and go 4.1 miles (passing Brown Valley Ranch) to where the road crosses Threemile Creek; immediately after this, take the right-hand fork of the road and follow signs to the WMA entrance. Calf Creek: From Hamilton take Fairgrounds Road east about 1 mile to Eastside Highway (Route 269); proceed northeasterly on Route 269 about 1.5 miles to Hamilton Heights Road; continue east about 5 miles to the WMA entrance. Both areas may be accessed by two-wheel drive vehicles **whenever roads are dry** between May 15 and December 1. Vehicular access is limited at Calf Creek between September 1 and December 1 to provide walk-in hunting opportunities. Both areas lend themselves to mountain biking in summer, but motorcycles and ATVs are prohibited at Threemile.

Management goal: Primarily to provide winter range for elk and compatible recreational opportunities for the public.

Hunting opportunities: Hunting at Calf Creek is by foot, horseback, or mountain bike, and the primary quarry is elk. Threemile



provides a mixture of motorized access and walk-in hunting opportunities for elk, mule deer, ruffed grouse, and black bear. Regulations for Hunting District 261 apply to Calf Creek WMA, and regulations for Hunting District 204 apply to Threemile.

Wildlife viewing: Few elk inhabit these WMAs during summer, but they are often observable nonetheless. The most likely observations are of songbirds and raptors commonly found in upland grasslands and ponderosa pine forests. Threemile WMA is closed to all visitation from December 1 through May 14, and a similar restriction is under consideration for Calf Creek.



MILO BURCHAM

SAGE GROUSE

They Used to Darken the Sky

by CHARLIE EUSTACE

IT WAS IN THE MID-1970s when I headed my '73 International pickup truck into Bud Kramer's ranch west of Cohagen. I never wanted to be too far from a source of help with that truck, but mostly I just wanted to visit Bud and pick his brain about wildlife. Bud was a dyed-in-the-wool horseman who had grown up on Little Dry Creek hunting, trapping, and observing wildlife. Talk drifted from horses—the walls of Bud's house were filled with photos of his cavalry days—to antelope, coyotes, and sage grouse. But the stories I remember most were about sage grouse.

"When I was a young man back in the twenties," Bud said, "I used to hunt and trap along Little Dry Creek. Sage grouse were so plentiful that when they got up they darkened the sky. Don't know what happened to them, there were too many for the coyotes and foxes to have eaten them all."

Those were pretty amazing words. After all, Montanans were shooting 30,000 to 50,000 sage grouse every year in the 1970s, and just 10 years earlier had taken 70,000 to 100,000 in two especially good years. But I had never seen sage grouse darken the sky, and I know no one has seen a sight like that in recent years. In fact, most hunters will tell you that sage grouse have been pretty hard to find of late, not just in Montana, but over the entire range of the species.

How serious is the decline? Because of the length and extent of it, some have suggested that the sage grouse should be listed as threatened or endangered. Quite a reversal for a species that was once the leading upland game bird in nine western states. Historically, sage grouse inhabited most of the western half of the U.S. and three Canadian provinces to the north. They are no longer found in Nebraska, Kansas, Oklahoma, New Mexico, Arizona, or British Columbia, and they're fading fast in six other states plus Alberta and Saskatchewan. Sage grouse are still relatively secure in Oregon, Idaho, Nevada, Wyoming, and Montana.

Although sage grouse were known to be losing ground in the 1930s and '40s in Montana, the extent of the decline elsewhere was not well documented until the 1950s when western states began doing biological surveys. Some states recorded substantial losses through the 1950s, while others did not note extensive reductions until the 1980s. Dr. Jack Connelly, an Idaho Fish and Game Department biologist who has conducted research on sage grouse for the last 18 years, attributes losses during the 1950s and '60s to conversion or alteration of sagebrush grasslands. Much of this was due to

herbicide spraying of sagebrush and the Desert Land Entry Act, a federal program allowing public land to be transferred to private ownership if certain criteria are met. "Hundreds of thousands of acres of sagebrush grassland habitat were lost in Idaho alone," says Connelly.

If the sage grouse has an Achilles heel, it is its total dependence on sagebrush. In many respects, it is the ivory-billed woodpecker of the prairie—the ivory-bill couldn't survive without its virgin forest habitat, and the sage grouse cannot survive without sagebrush.

If the sage grouse has an Achilles heel, it is its total dependence on sagebrush. In many respects, it is the ivory-billed woodpecker of the prairie—the ivory-bill couldn't survive without its virgin forest habitat, and the sage grouse cannot survive without sagebrush.

While the Desert Land Entry program has never played much of a role in Montana, rangeland conversion has. A review of statistics for the five Montana counties that contain most of the sage grouse habitat north of the Missouri River by Montana Fish, Wildlife & Parks (FWP) biologist Ray Mule showed that nearly a million acres of rangeland were converted to cropland

between 1954 and 1987. Comparing sage grouse harvest data with rangeland conversion data for this period, Mule found that 87% of the decline in sage grouse harvest could be attributed to rangeland conversion.

Sometimes sagebrush rangelands are converted a little bit here and a little bit there, a process called habitat fragmentation. Overall it doesn't appear to be harmful, since substantial patches of sagebrush may be left. It's kind of like removing a room or two from your house. You can take out a bedroom and the living room and still get by, but removing the kitchen and furnace can put a big kink in your home's year-round livability.

In studying sage grouse winter habitat in the Yellow Water Triangle area of central Montana, FWP biologist Rick Wallestad found 25,500 acres of sagebrush available to sage grouse during normal winters. When snow depth exceeded 12 inches, however, sage grouse were restricted to 1,700 acres of tall, dense sagebrush, or only 7% of the sagebrush available. Removing that 1,700 acres would be like removing the kitchen and furnace from your house—it just wouldn't be livable anymore.

Dr. Bob Eng, who retired recently after teaching upland game bird management at Montana State University for 27 years, notes that sage grouse prefer wintering areas that are relatively flat. "These areas offer good visibility to sage grouse and they usually blow free of snow," he says. "Unfortunately, these sites are also the most desirable for conversion to farmland."



RICH KIRCHNER

Sage grouse gather on communal strutting grounds, or leks, each spring to carry out their complex courtship rituals. Some areas of the West have shown significantly fewer birds on leks in recent years.

WHAT IS THE BEST WAY of estimating changes in sage grouse populations? We can look at hunter harvest, but this is tempered by the fact that the number of upland bird hunters has dropped by well over 50% since the early 1960s. The indicator used most commonly by biologists to gauge sage grouse ups and downs is the spring breeding survey. Each year beginning in March, sage grouse gather on strutting grounds called *leks*. Not unlike their human counterparts, the males puff up and strut in an attempt to look suave and debonair for demure females. Over time, changes in numbers of strutting males reflect changes in sage grouse populations.

Some areas of the West have shown significantly fewer birds on breeding leks in recent years. Claite Braun, a biologist with the Colorado Division of Wildlife, has observed a statewide decline of 50 to 66% based on lek counts since the early 1950s. In Montana, declines have been most marked in the last 15 years. For example, a 125-square-mile study area near Billings contained 352 strutting males on 12 leks in 1983. A downturn that began in 1984 has continued to the present, with only 58 males observed on six remaining leks in 1995, a reduction of 84%. In this case, habitat alteration doesn't seem to be the problem, since less than 3% of the study area has been disturbed.

Jack Connelly attributes the decline of sage grouse in the West during the 1980s and '90s not only to a changing agricultural base but to drought conditions. "If you're suffering from drought, chicks hatch out but are gone in a week or two because of a scarcity of insects and forbs," he says. Due to their high protein content, insects are crucial during the chicks' first three weeks of life. Forbs serve a dual role in chick survival—they become increasingly important for food as the chick matures and they provide the best habitat for many of the insects that are important to chicks.

Interestingly, two British biologists studying pheasants found that broods with the largest home ranges suffered the highest mortality, and that these larger ranges tended to contain lower densities of insects. They concluded that broods that are short of food must range over larger areas than broods occupying high-quality habitat, and suffer heavier mortality as a result. In other words, when insects are scarce, chicks are required to expend more energy to eat less, a losing proposition.

Low chick survival is no doubt a significant reason for recent declines in Montana sage grouse populations. Sage grouse wings—some 10,000 collected from hunters in south-central Montana since 1962—provide the best indication of chick-rearing success. Biologists determine sex and age from

Once the leading upland game bird in nine western states, the sage grouse is relatively secure today only in Montana, Wyoming, Nevada, Oregon, and Idaho. While the primary culprit is loss of sagebrush habitat, low chick survival due to drought has played a role in recent years. In Montana, sage grouse harvest has declined from about 50,000 annually during the 1970s to less than 20,000 in the 1990s.



wing feather characteristics, then calculate the ratio of juveniles to adults. These data show that for each 100 hens, an average of 317 young made it through to the hunting season between 1962 and 1979. From 1980 to 1994, a relatively dry period, only 199 young birds per 100 hens were reared to the hunting season. In other words, in each year during the last 15 years, hens have brought 37% fewer chicks through to the hunting season. After a while it starts to add up.

But chick survival is not the only factor limiting sage grouse numbers: nesting success also contributes to the problem: "The sage grouse is the least productive bird we have in Idaho," says Jack Connelly. "Only fifty-five percent of the yearling hens and eighty percent of the adult hens make a persistent effort to nest. And on average, only fifty percent of the hens that make a persistent effort to nest bring off a brood. Because of this, it takes the sage grouse longer to rebound from low population levels than any other game bird."

Unfavorable conditions can include drought, heavy predation, or even disturbance. "I had a radio-marked hen abandon her nest when a fencing crew was working on a fence three hundred yards away," says Connelly. "At the time the nest was within two or three days of hatching."

Bob Eng, too, believes nesting behavior has played a part in the decline. "All of our native grouse species attempt to renest more than we once thought, but generally they don't renest like pheasants. It's my observation that as conditions become less favorable for nesting, the effort put into nesting also declines."

Eng notes that drought and temperature often go hand in

hand in affecting chick survival. During the 1980s it was significantly hotter and drier in eastern and south-central Montana than during the 1960s and '70s. "Birds have less tolerance for temperatures that are above their optimum temperature than below it," he says. During early life, chicks cannot maintain their own body temperature and are periodically brooded by the hen to prevent chilling, but on an exceptionally hot day they may literally cook.

Obviously, high temperatures and dry conditions stack the deck against sage grouse survival. Reduced nesting effort and nesting success in turn produce fewer chicks. Less food, combined with the need to expend greater effort to find and eat what is available, spells increased mortality for the chicks that do hatch. This amounts to a sure-fire formula for a declining bird population.

In discussions surrounding decline of any game species, hunting is frequently suggested as the culprit, and closing the season as the cure. This is no doubt a throwback to the days when unregulated sport and commercial hunting decimated many game species. In its 1941-1942 Biennial Report, the Montana Fish and Game Commission noted that "large areas are now found in the western half of Montana where sage hens were once plentiful but are today totally absent." The commission attributed this to "heavy and indiscriminate hunting during settlement days and a series of dry years." In 1945, following three years of poor reproduction, the commission closed the sage grouse season statewide and did not open it again until 1952.

The experience of two of our Canadian neighbors provides insight into the question of hunting and its impact on sage grouse numbers. Southeastern Alberta and southwestern

Saskatchewan share a common sage grouse population on the northern edge of the species' range. Alberta has had a sage grouse season since 1967, while Saskatchewan has never held one. Lek count data sent to me by provincial biologists Wayne Harris of Saskatchewan and Harold Vriend of Alberta indicate that since 1987, Alberta's hunted population has declined by 83%. But Saskatchewan's unhunted population has also declined by 83% over the same period.

THE LONG-TERM PICTURE has not been rosy for the sage grouse. Montana's harvest was less than 8,000 birds in 1993, the lowest in 36 years of record. While a return to "normal" rainfall over a period of years would perhaps do wonders for short-term recovery, in the long term we must concentrate on the ever-shrinking habitat base. FWP currently has two habitat programs that protect, restore, or create upland game bird habitat on private and public lands.

The Upland Game Bird Habitat Enhancement Program receives approximately \$640,000 each year from the sale of upland game bird licenses. Projects have a duration of up to 15 years, depending on the land management practices involved. Over 575 contracts have been negotiated with landowners providing for shelterbelt plantings, winter food/cover plots, nesting cover, rest-rotation grazing, and wetland restoration. Thus far, more than 120 square miles of upland game bird habitat has been established or improved through the program.

The second habitat program was established by House Bill 526, a landmark conservation law directing FWP to set aside

a portion of hunting license revenues for protection of wildlife habitat across the state through land purchase, leases, or conservation easements. This program, which receives approximately \$2.8 million each year, emphasizes areas where habitat is seriously threatened by land use changes detrimental to wildlife. To date, 250 square miles of sagebrush grasslands have been protected through conservation easements that ensure the land will remain in agriculture, which in this case is primarily livestock grazing. Rest-rotation grazing systems have been established on these lands and public access for hunting and recreation guaranteed.

Concern for the sage grouse's welfare isn't limited to Montana. At a meeting this July, the Western Association of Fish and Wildlife Agencies directed the Western Sage Grouse Technical Committee to prepare a conservation plan that will lay the groundwork for all western states and Canadian provinces to work cooperatively in maintaining and enhancing sage grouse populations and their habitats.

Seventy years have passed since Bud Kramer hunted and trapped on Little Dry Creek and saw flocks of sage grouse that darkened the sky. In that time the land and people of Montana and other western states have seen many changes. One thing that hasn't changed, though, is the sage grouse's need for large tracts of sagebrush to survive. Fortunately for these native prairie birds and for Montanans, we have a far-sighted state legislature that has provided the means to begin protecting that habitat. Sage grouse may never darken the sky again, but with our help there will always be a place for them under the Big Sky. ■



BEN O. WILLIAMS

Editor's Note: On June 1, 1995, Governor Marc Racicot delivered the keynote address at a conference in Boise, Idaho, titled "Searching for Solutions: Solving the Bull Trout Puzzle." The Governor's speech provides a foundation not only for bull trout restoration, but for interaction among the sensitive issues of native fish management, economic stability, states' rights, and quality of life in Montana. Excerpted below, the speech articulates the Governor's vision for wildlife management in Montana.

I AM GRATEFUL to have the opportunity to discuss the issue of bull trout recovery, an issue that has clearly grown in intensity, in scope, in breadth, in risks, and in opportunity.

And I am honored to participate with Cecil Andrus and the Andrus Center for Public Policy.

It seems that now a day in the governor's office seldom passes without a discussion—or a debate—about bull trout, without a newspaper article written—and read—about bull trout, without a meeting on bull trout,

without progress on bull trout recovery, or speculation about federal bull trout decisions.

Such an interest in bull trout did not happen by accident. For the next fifteen minutes or so I'd like to tell you about bull trout recovery efforts in Montana. I'd like to discuss *who* is working on the recovery, *how* the recovery plan is designed to work, *what* is being done to help recover bull trout, and perhaps most importantly, *why* the recovery plan is being developed.

Let's start in the beginning. In 1991, our Department of Fish, Wildlife &

Parks contracted for the preparation of a status report on bull trout populations in Montana. The report concluded that bull trout were found in less than half the stream reaches where they used to be found, and that most of the existing bull trout populations in Montana were at risk. In October of 1992, essentially using the information compiled by the Department of Fish, Wildlife & Parks, a trio of environmental organizations filed a petition to seek protection for bull trout under the Endangered Species Act. There can be no doubt the petition to list the bull trout served as a warning to Montana. The warning was this: If we in Montana don't carefully and successfully manage our native fish, the federal government will do it for us, I believe states which either surrender or lose their native fish stewardship responsibility will soon in essence no longer have departments of fish and wildlife, but will in reality



PERSPECTIVES

Walking the W

have departments of hunting and hatcheries. In Montana, we intend to avoid that.

So throughout 1993, a small core group of Montanans developed an idea for a bull trout action plan. The official first step was in December of 1993, with the Governor's Bull Trout Roundtable Conference in Missoula.

The Bull Trout Roundtable provided an opportunity for state, federal, and private managers of wildlife, water, and land resources in Montana to discuss the possibility of collaborating—actually working together—toward the voluntary construction of a cooperative and comprehensive bull trout restoration plan.

I believed then—and continue to believe now—that there is great opportunity in a collaborative process which involves Montana natural resource agencies in conjunction with

real life Montana citizens interested in bull trout...that they—we—can and should develop a cooperative bull trout recovery plan that protects, maintains, and enhances bull trout populations without upending western Montana's economy.

It would be inappropriate and unwise to dismiss the societal and economic aspects of this plan. I'll discuss these impacts in a moment.

We knew, whether the bull trout was listed or not, that our plan must meet the mandates contained within the Endangered Species Act. Our premise for action is simple and driven by common sense: We recognize the bull trout is in need of special management, and Montanans can and should design and implement the framework for this special management.

The general consensus of the Roundtable was that a collaborative plan was not only possible, but pre-

ferred. So we worked to establish a charter group to serve as the Montana Bull Trout Restoration Team. There are nine entities serving on the charter group. They are Montana Fish, Wildlife & Parks; the Montana Department of State Lands; the U.S. Forest Service; the U.S. Fish and Wildlife Service; Plum Creek Timber Company; the Confederated Salish and Kootenai Tribes; the Bonneville Power Administration; the Montana Chapter of the American Fisheries Society; and the National Wildlife Federation.

The state and federal agencies clearly have water, wildlife, and land management authority critical to bull trout restoration efforts. Plum Creek owns thousands of acres of important bull trout habitat. The American Fisheries Society, with its diverse membership of fisheries biologists along with its technical abilities, helps serve as a peer review entity as well as offering positive advice in the construction of the plan itself. The National Wildlife Federation has lengthy



Walk for Bull Trout

by Governor Marc Racicot

experience in Montana's wildlife restoration issues.

Our thinking was to keep the group to a size that was large enough to include the essential representatives needed to create a comprehensive plan, but small enough to be an efficient and effective working group that could move forward and actually get something positive done on the ground in a timely fashion.

With only nine members signing the charter, it is clear the Restoration Team does not and cannot contain everyone with an interest in bull trout restoration. For those entities, our pledge was simple: We

promise there will be many opportunities for individuals and interests to shape the restoration plan. Abundant public involvement will be available at every meeting, opportunities to comment on development of the plan will be available at every stage, and nothing will be implemented without the involvement of local residents in affected watersheds.

Thus far, to my knowledge, no other wildlife or natural resource issue in Montana has been approached in as open and as public a fashion as the development of this bull trout restoration plan.

Our bottom line is this: Anyone who wants to be involved in the development of the plan has an open invitation to become involved and stay involved.

I fully realize that other approaches are available, and that some may believe our dedication to public involvement is expensive, wasteful, foolish, possibly even counterproductive. We think the opposite. The best way, if not the only way, for us to accomplish our goal is through a collaborative plan that Montanans can embrace and possess. Remember our goal is the voluntary completion of a

scientifically sound, procedurally possible, and publicly acceptable plan that will restore and enhance bull trout populations throughout its historic range in Montana. Our goal is not an academic report or a set of state recommendations. Our goal is to construct specific on-the-ground changes in specific river corridors. We are not—I repeat, not—involved in this for the entertainment value of the exercise or for abstract or theoretical purposes.

The “who” is working on bull trout restoration in Montana...as I just discussed...naturally blends into the

trout; land management guidelines and standards for activities such as logging and grazing; and a thorough examination of the role of hatcheries in bull trout restoration.

Certainly, much work remains to be done. But the scientific knowledge and scientific foundation for the restoration plan continues to grow, and with that growth comes enhanced opportunity for success and increased bull trout numbers.

But the best science in the world exists as mere information until it is applied.

Our bull trout science will be applied by watershed groups, with help from the Bull Trout Restoration Team

and others. A scientific box of tools is being developed by the Roundtable and Scientific Group, and like master carpenters, watershed groups will use the proper tools in the proper fashion for the proper result. The solutions to bull trout restoration are as diverse as the threats to bull trout populations.

Eradication of

non-native fish. Augmented stream flows. Improved grazing practices and protected riparian areas. Access restrictions to bull trout spawning areas. Reduced or eliminated “take” of bull trout. Improved public information. Citizen “anti-poaching” groups. Improved forest practices. Stepped-up presence-absence surveys. Modified hydropower management. Land exchanges. Improved fish identification information to anglers.

The more site-specific the solution, the better the chance of success. The more site-specific the discussion, the better the chance of lasting success. Keep in mind the basis for this plan is voluntary. We are not building a government plan. Montanans are developing a bull trout plan.

We admit this entire concept is experimental and there is no guarantee

The bottom line of all this is simple: The bull trout is a native Montana fish and Montanans have not only a legal but a moral obligation to maintain viable populations of native species. We owe it to future generations of Montanans to be good stewards of resources that are as much theirs as ours.

“how” we are building the restoration plan itself.

In addition to a signed charter and a cooperative commitment to this project, the initial Restoration Team action step was the appointment of a Scientific Group. The mission of the Scientific Group is to produce the scientific basis for developing specific bull trout watershed restoration plans.

Here's a quick rundown of the Scientific Group accomplishments in the past year or so. They've focused on the threats to bull trout and possible recovery strategies in the twelve specific watersheds that constitute virtually the entire range of the bull trout. The Scientific Group has also done extensive work on three key components of restoration plans: removal and suppression of non-native species such as lake trout and brook

for success. It is possible a watershed group may decide bull trout aren't all that important, after all. It is possible a watershed group will fail, despite best intentions, to develop a local bull trout plan. It is possible voluntary restoration plans may need added legal enforcement.

But I am convinced that people working in good faith and with honest purpose will put self-interest aside and develop consensus proposals. I have so much confidence in our bull trout process and the commitment from Montanans that I have volunteered to sign a habitat conservation agreement with the Secretary of the Interior.

While the watershed groups play the central role in bull trout restoration, they do not play the only role. This brings me to the "what" Montana is doing to restore bull trout.

Here are a half dozen examples of specific action steps that would not have been taken without the Restoration Team's recommendation or restoration process.

The Montana Department of State Lands has voluntarily agreed to suspend all harvest of timber within streamside management zones (SMZ's) on state lands unless a fisheries biologist report indicates the harvest will not impair bull trout habitat or populations.

The Montana Fish, Wildlife & Parks Commission approved an emergency angling closure on the taking of bull trout from Hungry Horse Reservoir. Montana Fish, Wildlife & Parks is conducting a comprehensive public information campaign designed to accomplish a multitude of important tasks: help anglers with fish identification to decrease incidental take of bull trout; build improved respect for the bull trout; provide information about the inherent responsibility we as Montanans have in managing native species; provide education on the importance of the Restoration Team and watershed restoration plans; and just plain provide a larger understanding about the special needs and unique attributes of the bull trout.

And the recent session of the Montana State Legislature passed bills that increase the penalties for bull trout

poaching, prohibit the transport of certain live fish, and enhance the department's ability to inspect private fish ponds. All these new laws will help to curtail the illegal take of bull trout and the spread of exotic fish, and I remain convinced these laws would not have been approved without the background work of the Bull Trout Restoration Team. In addition, an historic instream flow protection bill passed the Legislature which greatly expands the ability of Montanans to protect stream flows necessary to protect fish and aquatic life.

The importance of this work brings me to the final chapter of my discussion—the "why" of bull trout restoration. Why has the State of Montana undertaken this colossal experiment and perched itself on a such a narrow, risky, wildlife management limb?

Bull trout restoration does not depend on the Endangered Species Act, but an answer to the question starts there.

We have heard a great deal of debate about whether or not the bull trout should be added to the Endangered Species List. Rather than wade into that debate with our own expert opinion, the State of Montana has focused its energy, its money, its attention, and its commitment on actually putting a plan on the ground that restores the fish. That is still our focus. That will remain our focus.

It is wrong, I believe, to take a political problem-solving approach to scientific problems such as wildlife management. Decisions on which species should receive protection under the Act should be scientific decisions driven by wildlife managers, not political decisions made by Congress or governors. But the Act, after reauthorization, absolutely must become flexible enough to allow states an ability to play a meaningful and productive role in every aspect of a listing decision. We deserve that right, and the Act and wildlife will benefit from state participation pursuant to the recognition of that prerogative.

The bottom line of all this is simple: The bull trout is a native Montana fish and Montanans have not only a legal but a moral obligation to maintain viable populations of native species.

We owe it to future generations of Montanans to be good stewards of resources that are as much theirs as ours.

This belief is not novel in Montana. A century ago elk, bighorn sheep, mountain goats, antelope, grizzly bears, and other species were all but extinct in Montana. No longer. For the past 100 years, one of the most impressive wildlife conservation stories in America has transformed Montana prairies, mountains, and foothills into areas of richly populated wildlife. These past generations were good stewards, and now it is our turn to be good stewards for future generations.

Biologists like to talk about indicator species. The bull trout collaborative process is an "indicator process." The success of our efforts on bull trout will not only tell a great deal about us as a people—as a society—but will determine if future collaborative efforts are possible on other species, such as westslope cutthroat and Yellowstone cutthroat, and all natural resources management issues.

The bull trout is important for what it is—a native fish. And it is important for what it represents—an opportunity for Montanans to master our own future, to control our own economic opportunities, to determine how western Montana will look in the future, and the quality of life for those who live there.

It is as simple as this: When we retain the authority to manage our own native species we retain the authority to manage our own destiny.

But no one should think this is an easy process with an easy solution. And it is much less difficult for states to "talk" native species management than to "walk" native species management. The challenges, from funding to legal authority, from economic impacts to public involvement, are immense. But the potential rewards, to our people and our wildlife, are also immense.

That's why the bull trout restoration efforts are so important, why we are so committed to it, and why a governor would fly across state lines to discuss it.

Thank you for your kind attention here today. ■

JIE HUANG WINS NATIONAL JUNIOR DUCK STAMP CONTEST



The U.S. Fish and Wildlife Service is exhibiting Jie Huang's winning pintail portrait around the country this year.

Jie Huang, a budding young artist from Hamilton, Montana, recently was named the national winner of the U.S. Fish and Wildlife Service's Junior Duck Stamp Design contest.

The 16-year-old Jie (pronounced gee-a), whose father and brother both are accomplished artists, beat out approximately 30,000 other contestants nationwide with her acrylic painting of a pintail duck to win the national honor. Her painting advanced to the national competition by being named "Best of Show" in the Montana state contest held in May. All state "Best of Show" winning designs are sent to Washington, D.C., where first-, second-, and third-place winners are selected by a panel of judges during the USFWS's celebration of the Federal Duck Stamp's first day of sale, held each year on June 30. Forty-eight designs were judged this year. The judges of the previous year's Federal Duck Stamp competition select the Junior Duck Stamp design winners.

Modeled after the USFWS Federal Duck Stamp art competition, the Junior

Duck Stamp Design contest is part of an innovative educational curriculum that teaches youngsters in grades K-12 about wetlands and waterfowl conservation. Educators use the curriculum throughout the school year and one of the major classroom activities is creating Junior Duck Stamp designs, some of which are then entered into the state competitions.

Jie's teacher at Hamilton High School, where she will be a junior this fall, was Jim Roth. Said Roth of Jie's abilities: "She is excellent in almost any medium, she is wonderful to work with and she is a hard worker—a very hard worker."

For her efforts and abilities, Jie will receive a \$2,500 scholarship and an all-expense-paid trip to Washington, D.C., in November for herself, one of her parents and Roth, where she will be honored at the Federal Duck Stamp competition.—*William Phlippen, information officer, Conservation Education Division, Helena*

BANNER YEAR FOR DUCK HUNTERS IN STORE

A second consecutive year of plentiful rains and a decade of intensive wetland conservation efforts fueled by a tremendous partnership among government, conservationists, and private landowners have yielded the largest breeding duck population in 15 years. The annual breeding duck survey this spring recorded an estimated 35.9 million ducks, up more than 10% from 32.5 million last year. The survey area covers 1.3 million square miles across the north-central U.S., western and northern Canada, and Alaska.

Breeding mallard populations rose 18% to 8.3 million, the highest level since 1972 and above the 8.1 million goal contained in the North American Waterfowl Management Plan. Three species reached all-time highs: canvasbacks were up 47% to 771,000,

redheads rose 36% to 888,000, and gadwalls were up 22% to 2.8 million.

"This recovery would not have been possible without the support of America's conservation-minded people and the millions of acres of waterfowl habitat restored and conserved in the past decade," said U.S. Fish and Wildlife Service Director Mollie Beattie. "Many conservationists had a hand in bringing about this great success, but I especially congratulate the Nation's hunters for their vital role. They were the vanguard who opened the way for this recovery, who continued to buy licenses and Duck Stamps even when seasons were shortened and bag limits lowered, and who contributed their time and money to protect and restore waterfowl habitat. They kept the faith and kept their federal and state governments working to protect vital habitat."

The U.S. Fish and Wildlife Service administers or participates in a number of programs to conserve and restore waterfowl habitat. For example, the North American Waterfowl Management Plan, an international partnership effort, has protected, restored, or enhanced more than 2 million acres of wetland habitat since 1986. In addition,



Due to plentiful rains and a decade of intensive wetland conservation efforts, duck populations are the best they've been in 15 years.

other government programs such as the Conservation Reserve Program and the Wetland Reserve Program have conserved millions of acres of wildlife habitat in recent years. And sportsmen and conservation organizations such as Ducks Unlimited have conserved and restored millions of acres of prime habitat. In addition, laws such as the Swampbuster provisions of the Farm Bill and the wetland protection provisions of the Clean Water Act also have helped conserve key waterfowl habitat.

"With these great conservation programs in place, we literally laid the foundation; all we needed to do was watch and Mother Nature has finally come through," Beattie said. "If we had

not saved the habitat, the rains of the past two years would not have helped waterfowl very much. This proves what we have known for a long time: habitat is the key to wildlife and fisheries conservation.

"The temptation may be to rest on our laurels, but the drought taught us we cannot always depend on good weather. If the recovery of duck populations is to continue, we must rededicate ourselves to additional habitat conservation efforts in the years to come. Waterfowl must have a reserve of habitat that is available every year regardless of weather."—*U.S. Fish and Wildlife Service*

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THE BUCKET BRIGADE

by Jim Vashro
Regional Fisheries Manager
Fisheries Division, Region 1

Stone cliffs stood like sentinels among the trees on the opposite shore of Bootjack Lake. The lake was pockmarked with rings of rising fish as far as I could see. It had been several years since I'd fished Bootjack, just northwest of Whitefish. The lake is managed for trophy trout, and visions of lunker rainbows filled my mind. Incredibly, I had the lake to myself.

Small fish darted for cover in the weeds. Oddly, I didn't see the shrimp and dragonflies I expected. Some small tan mayflies appeared to be the main course. I hastily strung my flyrod and pulled on waders and float tube, my fingers turned to thumbs by the nearby swirls. I waddled backward into the lake and a few powerful kicks put me where the water turned to dark green. I spun around and dropped my offering close to the nearest rise. The fly bobbed for a second, then disappeared in a vicious swirl. As usual, I reared back on the rod way too hard.

But instead of the chrome and crimson trout I expected, a palm-sized sunfish came flying back toward me. I was stunned. There were only supposed to be trout here. Another cast, and the next, and the next, confirmed my fears. There were pumpkinseeds, lots of them. Several year classes, each more numerous than the previous one. Another illegal transplant.

Small sunnies trailed behind me, nipping at my swim fins. The one trout that managed to beat the horde to my fly looked lean. Grimly I packed my gear and started hiking back to the truck. In my mind I calculated the cost of restoring the trophy fishery—at least \$10,000 and a couple of lost years of fishing.

Five years ago I wrote an article called "Illegal Aliens" (*Montana Outdoors*, July/August 1990), chroni-

cling more than 160 illegal introductions across the state. Since then, FWP biologists have documented nearly 50 more illegal introductions. They are ill-conceived, devastating, mostly irreversible. And illegal. People are spreading fish across the state like a bucket brigade, destroying fisheries in their wake.

Doesn't hurt you? Guess again. Faber Reservoir in northeastern Montana was an excellent rainbow trout fishery until suckers showed up and reduced trout growth, condition, and survival. Chemical rehabilitation (rotenone) is unfeasible, so the trout fishery will never reclaim its past glory. The trout fishery in Buffalo Wallow Reservoir in central Montana was destroyed by yellow perch. A chemical rehab to remove the stunted perch would cost thousands of angler license dollars—and might not succeed. Hubbard Reservoir in northwestern Montana was rotenoned in 1988, and quickly grew 18-inch rainbows and 16-inch kokanee. But the rehab didn't get all the redbreasted shiners—which again are exploding in numbers—and yellow perch have now been added and are also booming. Gamefish growth has dropped by 4 to 6 inches and fish managers are waiting for a reservoir drawdown in a couple of years to try another rehab.

Trout and salmon aren't the only fish hurt. Bass and crappie in Maier Reservoir (Fallon County) have been largely replaced by carp and yellow perch, which have turned the reservoir into a muddy mess. Fish managers agree that yellow perch are the biggest threat statewide, since perch can really hammer existing fisheries. The perch usually become stunted and provide no fishing opportunity themselves. Suckers, shiners, bullheads, and carp all turn up way too often and cause big problems. Even illegally introduced gamefish have to establish by displacing another species and can cause problems.

Even more frightening are the potential effects of some recent discoveries. Bighorn Lake deserves recognition for jumbo walleye and crappie, but it's overshadowed by its internationally known neighbor, the Bighorn River. Striped bass, emerald shiners, and gizzard shad, all of which have recently been found in the system, could turn the fishery upside down.

It's always been hard to raise trout and salmon in the Seeley/Salmon chain of lakes in western Montana. Northern pike have now shown up and are increasing. Pike have to be establishing a foothold at the expense of some other fish in these unproductive waters.

Introduced northerns and walleye now threaten Canyon Ferry Reservoir, the state's most popular fishery for trout and large yellow perch. Perch are already dropping in numbers.

How fast can changes occur? An individual was observed dumping yellow perch in Lake Mary Ronan in western Montana in spring of 1992. At least three year classes now exist. Our gill net surveys showed an average of two perch per net in fall of 1993; eight perch per net in spring of 1994; and 31 perch per net in fall of 1994. The trout and salmon fishery is valued at \$4.5 million annually, but a chemical rehab would cost more than \$300,000 that FWP does not have budgeted, as well as several years of little or no fishing.

Recently in northwestern Montana, Lion Lake was rehabbed for \$12,000 and Rogers Lake was rehabbed for \$25,000 to remove perch. Fishing in Lion has since gone from near nothing to dozens of anglers per day, and the grayling in Rogers have grown 10 inches in the first year. But the rehabs cost money that could have been spent on improving, not reclaiming, fisheries. Clark Reservoir and South Fork Reservoir in eastern Montana were rehabbed at a cost of over \$4,000 and fishing is good again. But at \$13 per fishing license, it takes the equivalent



BRUCE AUCHLY

Fish stocking operations by FWP employees—like the one pictured here—are carefully planned and subject to environmental review. Illegal transplants don't go through any thought process at all. Yet people are spreading fish across Montana like a bucket brigade, destroying valuable fisheries and wasting thousands of dollars of anglers' money. If you observe suspicious activity, please report it to an FWP employee or call 1-800-TIPMONT. You can remain anonymous and you may be eligible for a reward.

of revenues from 150 anglers to treat a prairie pond. Lake Mary Ronan would require the equivalent of more than 23,000 fishing licenses.

In addition to outright costs, illegal transplants affect fishery programs in other ways. Legal introductions are limited by the threat of subsequent illegal movements to nearby waters. Bluegills were illegally introduced into Carpenter Lake near Eureka, and now have shown up in nearby Sophie Lake. Black crappie were moved at least 120 miles to Blanchard Lake near Kalispell. Concern for illegal transplants prompted the Montana Fish, Wildlife & Parks Commission to ban the legal introduction of popular walleye west of the Continental Divide.

Intensive management has created an outstanding largemouth and small-mouth bass fishery in Noxon Rapids Reservoir in western Montana—good enough to attract attention across the Pacific Northwest and draw the 1994 BASS Western Divisional Tournament. Nevertheless, six illegal walleyes were gill netted in summer of 1994. Walleye not only threaten the bass fishery but the kokanee and trophy Kamloops downstream in Lake Pend Oreille. Legal introductions go through envi-

ronmental reviews and still can go awry. Illegal transplants don't seem to go through any thought process at all. As outdoor writer Jerry Smalley wryly noted in a recent newspaper column, "Don't illegally transplant fish. Leave the mistakes to the professionals."

Hatchery critics have unjustly used illegal transplants to attack legitimate hatchery operations, and private ponds are coming under increasing scrutiny. Illegal plants are suspected in the appearance of whirling disease in the Madison River and illegal yellow perch and minnows threaten a walleye fingerling rearing operation in small ponds near Fort Peck. Yellow perch and pumpkinseeds were recently introduced into Jessup Mill Pond, the water supply for the Creston National Fish Hatchery near Kalispell. If those fish reproduce, the resulting fry could enter the hatchery and be unintentionally planted with hatchery fish. The culprits were apprehended, paid \$1,030 in fines, and lost their hunting and fishing privileges for two years, but hatchery crews have spent over \$5,000 in efforts to recover the illegal fish.

Some illegal transplants are just plain bizarre. Anglers found piranha in Lake Elmo in Billings, a pacu (a fruit-

eating Amazon fish) in Foy Lake, and a starfish in Little Bitterroot Lake near Kalispell. A law passed by the 1995 legislature in response to illegal plants makes it illegal to transport live fish in the central and western fishing districts without authorization. Four illegal transplanters have been apprehended in the state, two under the new law. Three of those arrests came from citizen tips. You can report suspicious activity to a local game warden or FWP biologist, or call 1-800-TIPMONT if you wish to remain anonymous or possibly qualify for a reward. A reward of up to \$10,000 has been offered for conviction of persons responsible for dumping walleye into Canyon Ferry Reservoir.

Anglers need to unite in a common front against this threat. In 1992, 45 sporting groups across the state adopted a resolution by Montana Walleyes Unlimited, Montana BASS Federation, Montana Trout Unlimited, and the Montana Wildlife Federation that opposed illegal introductions and called for increased education and enforcement. Educate yourself and your fishing partners on the perils of illegal transplants. Your fishing future depends on putting a hole in the bucket.

READERS RESPOND

OLD LOG BUILDING NEEDS PRESERVATION

Your article by John Taillie, a maintenance worker who wrote the article "Pooling Resources to Preserve the Past" in the May/June issue was very interesting.

Our community has a log hall/gym built in about 1937. The logs are decaying and some need replacement. There was a preservative sprayed on the logs 30 years ago but it really needs some preservation work now.

Do you have any pamphlet material, instruction, any kind of help for our board to use? There are five young men on the board to take care of the hall.

We would surely appreciate any help or instructions. Thank you!—*Mrs. Norris E. Cole, Forsyth*

Thanks for your interest in the article. I have enclosed a packet of information that may be of help to you. If you have the time, I would suggest that you send someone who will be working on your building to one of the workshops put on by the U.S. Forest Service Region 1 Historic Preservation Crew (contact Bernie Weisgerber, U.S. Forest Service Region 1, P.O. Box 7669, Missoula, MT 59807). Also, our FWP crew will be working on log replacement on a building at Bannack State Park sometime this fall; perhaps you could send someone over to work with our crew as a volunteer. For specific dates, please contact me at Montana Fish, Wildlife & Parks, 1400 S. 19th, Bozeman, MT 59715; (406) 994-4042.—John Taillie

HUNTERS HELP FEED THE NEEDY

The Montana Chapter of Safari Club International wishes to thank you for your help in promoting our Sportsmen Against Hunger Program.

Last year, the Sportsmen Against Hunger program produced over 45,000 pounds of wild meat in Montana for consumption by those less fortunate in our society. The help of organizations like yours is the reason the program works!

The Sportsmen Against Hunger program is active in all 50 states. Last year, the Montana Chapter of Safari Club International had the most successful program in the nation. As a result, we were featured on CBS's "This Morning" program. People all over the country got to see firsthand the generosity of the American hunter and how our program helps those in need.

Again, thank you for all you do for the program and we sincerely hope you will continue to participate in this worthwhile endeavor.—*Ron Barker, Billings*

Anyone interested in helping with this year's Sportsmen Against Hunger Program can write Montana SCI, P.O. Box 1754, Billings, MT 59103.—Editor

KEEPING THE "BIG SKY" SPIRIT ALIVE

Please renew my subscription for three more years. It does my heart good to open the mailbox and there it is! Your articles are very educational, well written, and pictorially pleasing to the eye. I own 20 acres of land 30 miles west of Kalispell at McGregor Lake. One day I will build my log home there. Of all the western states I have visited Montana is "IT"! So, until I can call myself a Montanan, I am counting on you to keep the "Big Sky" spirit alive in me...you do! Keep up the great job you are doing. Thank you for your time.—*Michael Armstrong, Perry, Michigan*

I have only received one of your issues (plus the back-order issue I requested), and have already fallen in love with the magazine (or Montana). If what your articles and photos shout are Montana, it is no wonder why people want to live there. I admire the respect and awe you give the land and its creatures. I appreciate the respect and awe you give to its Creator. This magazine is honest and pure. It is often rare to find this kind of honesty,

respect, and awe in the East. There is little of land and creatures (in comparison) left. I do enjoy hunting every fall. The beauty of field, forest, and animal are just immeasurable. Thank you for printing such beauty!—*Joyce E. Shenberger, Manheim, Pennsylvania*

As a Montana native who now lives in a part of the extended Big Sky Country, I would like to say that I truly enjoy your publication. The articles are interesting and insightful, the photography exceptional. *Montana Outdoors* is medicine for those of us still addicted to a very special place and way of life.

I left Montana in 1970, first to the military and then to work in the Seattle area, to now living in the Bellingham area where I spend time writing. I visit my folks and friends in Montana as often as I can and will return for good some day. I have met so many people from Montana here and elsewhere, who keep the same hope alive that they too will one day return.

Keep up the excellent work that you are doing with the magazine and also in preserving and enhancing a special place.—*Myron L. Wlaznak, Bellingham, Washington*

RED BURKE WAS A GREAT GUY

The picture on page 2 of the March/April issue brought back a few memories. I knew Red Burke and Gene Sherman well. I replaced Gene as the game warden in Roundup in 1941 when he moved to Kalispell. Red Burke could smell a poacher a mile away. He was a great guy and did a lot for the department.

The photo on the back cover of the May/June issue is pretty close to where I started fishing the Madison when I was 10 years old. I found out on my last trip to New Zealand that I can throw a fly just as far, but at age 77 have a hell of a time standing up. Fast water and big rocks don't agree with me.—*Ben Wahle, Burlingame, California*

CONTRIBUTORS

Antelope are abundant in Montana nowadays, but that hasn't always been the case. In "Return of the Native," **SAM CURTIS** traces the growth of pronghorn populations in the state from a low of about 3,000 in 1924 to roughly 150,000 in recent years. Seasons were closed for much of the first half of the century—a far cry from today's situation. In his article beginning on page 2, he profiles these native prairie dwellers and describes the hunting tactics that work best for them. A Bozeman-based free-lancer and avid hunter, Curtis looks forward to immersing himself in the eastern Montana landscape each fall.

No doubt about it, wolverines have been the victims of bad press. These 30-pound members of the weasel family have long been credited with supernatural strength and a nasty disposition. In reality, though, says **BRUCE AUCHLY**, author of this issue's "Watchable Wildlife" segment, "they probably just want to be left alone to gnaw on a frozen elk carcass." Once devastated by unregulated commercial trapping and predator poisoning campaigns, wolverines have made a comeback in Montana. To learn more about these secretive furbearers, turn to "Devil Bear" on page 9. Auchly is FWP's information officer for Great Falls (Region 4).



Bayless



Burt

Montana has lost fewer of its wetlands than other states and provinces in the prairie pothole region, an area that produces more than half of the continent's ducks each year. And, according to **SHAWN BAYLESS** and **HOWARD BURT**, that makes Montana's

contribution to the nation's recovering duck populations increasingly important. In "Partnerships on the Prairie" (p. 13), Bayless and Burt describe two cooperative "joint venture" projects in eastern Montana that are helping get waterfowl populations back on track. Bayless and Burt are FWP wildlife biologists stationed in Flaxville and Malta, respectively.



Thompson

"Charles Dickens might have called the Bitterroot Valley 'The Ghost of Montana Future,'" says **MIKE THOMPSON** in this issue's "Lands Legacy" installment. "It is the fastest growing region in Montana, and if present trends continue, recent immigrants (since 1985) from other states will constitute a majority of its population by the turn of the century." To learn how FWP managers are attempting to serve the needs of wildlife and the public on two wildlife management areas in this rapidly changing environment, read "Growing Pains in the Bitterroot" beginning on page 19. Thompson is a wildlife biologist headquartered at FWP's Missoula (Region 2) office.

"Most hunters will tell you that sage grouse have been pretty hard to find of late, not just in Montana, but over the entire range of the species," writes **CHARLIE EUSTACE** in "Sage Grouse: They Used to Darken the Sky" (p. 23). Why the decline? Drought, predation, and the sage grouse's indifferent nesting behavior all are contributing factors, but habitat alteration is the primary culprit. Sage grouse are totally dependent on sagebrush, says Eustace, and gradual conversion of sagebrush

grasslands to cropland or other uses has left them with a shrinking habitat base. Fortunately, efforts are now underway at the state and regional levels to maintain sage grouse and their habitat. Eustace is the department's wildlife manager for Region 5 (Billings).

As **GOVERNOR MARC RACICOT** asserts in this issue's

"Perspectives" piece (p. 28), "We owe it to future generations of Montanans to be good stewards of resources that are as much theirs as



Racicot

ours." One of those resources is the beleaguered bull trout, a native species that has declined dramatically in recent decades. In a keynote address delivered at a bull trout conference this summer in Boise, Idaho, and reprinted here, Governor Racicot outlines his vision for restoring the bull trout, as well as for wildlife management in Montana.

MO thanks the following photographers for their contributions to this issue: **MIKE BARLOW**, and **BEN O. WILLIAMS**, Livingston; **DENVER BRYAN**, **DANIEL J. COX**, and **RICH KIRCHNER**, Bozeman; **JOHN BARNES**, Townsend; **MILO BURCHAM**, Missoula; **GLENN D. CHAMBERS**, Columbia, MO; **MICHAEL H. FRANCIS**, Billings; **BRAD GARFIELD**, Tremonton, UT; **JIN HUANG**, and **LARRY JAVORSKY**, Hamilton; **DONALD M. JONES**, Troy; **GARY KRAMER**, Willows, CA; **BILL MARCHEL**, Brainerd, MN; **BILL McRAE**, Fairfield; **RICHARD MOUSEL**, Fort Benton; and **MICHAEL S. QUINTON**, Slana, AK. Thanks also to the following contributors who work for the department: **BRUCE AUCHLY**, Great Falls; **HOWARD BURT**, Malta; and **BILL THOMAS**, and **MIKE THOMPSON**, Missoula.

